

NASA TECH BRIEF



NASA Tech Briefs announce new technology derived from the U.S. space program. They are issued to encourage commercial application. Tech Briefs are available on a subscription basis from the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151. Requests for individual copies or questions relating to the Tech Brief program may be directed to the Technology Utilization Division, NASA, Code UT, Washington, D.C. 20546.

Improved Antenna Pattern Recorder Provides Visual Display of RF Power

The contour of an antenna pattern provides a record of the relative rf power received by the antenna. Previously, an antenna pattern recording system sampled and recorded the rf power every 2° with a sample space of 59 msec. At one revolution of the antenna per minute, the sample space is 0.36° , leaving a 1.64° angle; thus, 82 percent of the contour is known only within a limited level of certainty.

A discretionary signal level monitor has been added to the system to sense a specified minimum level occurring between sampling intervals. This additional information enables the rf power and percent coverage to be calculated more accurately.

In the operation of this system, the monitored signal is derived from an emitter follower output of a 1 kHz narrowband amplifier. The signal amplitude is then limited and after undergoing rectification, the signal charges a capacitor that maintains a Schmitt trigger in the "0" state.

As the input signal decreases, the amplifier ceases to limit, and the voltage across the capacitor drops. The Schmitt trigger changes state at a predetermined level, triggering a "1" in the silicon controlled rectifier memory. In this condition the "1" is stored until the silicon-controlled rectifiers are reset at the next data cycle. A punch unit of a duplicator system was modi-

fied for independent operation and used for the monitored output.

Notes:

1. This innovation provides a means of monitoring and displaying the continuous variations in rf signal power.
2. The system is applicable to all antenna ranges and is adaptable to any sampling systems where the time derivative of the signal is suspected to be too great for the sampling interval. The monitor could be extended to the recording of the actual minimum value or the average over the sample interval.
3. No additional documentation is available. Specific questions, however, may be directed to:
Technology Utilization Officer
Code A&TS-TU
Marshall Space Flight Center
Huntsville, Alabama 35812
Reference: B70-10230

Patent status:

No patent action is contemplated by NASA.

Source: R. Lipin Jr., of
Sperry Rand Corporation
under contract to
Marshall Space Flight Center
(MFS-20447)

Category 09